

Region 2

New Jersey, New York, Puerto Rico, U.S. Virgin Islands

Sharing Lessons Learned Has Benefits for Treatment

Herkimer WWTP, New York

A great benefit of the 104(g)(1) program is the way that assistance providers can apply their experience and expertise to a large number of facilities. When they find an innovative and low-cost solution for one facility, they can often apply it to other facilities without having to “reinvent the wheel.”

For instance, 104(g)(1) technical assistance providers with the New York State Department of Environmental Conservation have found that the installation of low-cost baffles can solve the common treatment problem of marginal treatment in secondary clarifiers that have short-circuiting currents. A two-step

technical assistance approach to this problem involves determining the intensity and location of the flow problems and then strategically installing the low-cost baffles to reduce the current in problem areas.

“It is estimated that in 1972 approximately 2,000 miles of New York’s rivers and streams were impaired by water pollution. Today, efforts to control wastewater discharges have reduced that figure to 700 miles.”

—EPA Region 2, “State of the Environment,” 1998

At a treatment facility in Herkimer, New York, a \$100 baffle improved solids removal by 32 percent and allowed the community to avoid a half-million dollar upgrade. Other communities also have benefitted from this approach.



A \$100 baffle at the Herkimer WWTP improved solids removal by 32 percent and enabled the community to avoid a half-million dollar upgrade.

Technical Assistance as a Compliance Tool

Village of Chatham WWTP, New York

Most regulatory agencies recognize that enforcement is only one of their available tools. The New York State Department of Environmental Conservation uses three tools—enforcement, assistance, and monitoring—in its stated compliance strategy.

The case of Chatham, New York, is an example of a situation where monitoring identified a problem and then regulators suggested technical assistance as a means to overcome that problem and achieve compliance. The Village of Chatham is located in the foothills of the Berkshire Mountains on the eastern side of New York State. In 1994, when Chatham's Wastewater Treatment Plant began to discharge elevated effluent ammonia, New York State officials requested 104(g)(1) technical assistance to address the small system's problems.

Working with Chatham plant staff, the 104(g)(1) providers determined that a lack of oxygen in the plant's oxidation ditches was the main factor impairing ammonia removal. A second ditch was put on-line to increase the amount of dissolved oxygen so that nitrification could occur. Oxygen levels were maximized further by adjustments to the treatment process. These alterations immediately improved Chatham's effluent readings.

Average ammonia–nitrogen levels in the facility's effluent were reduced by 92 percent.

With these alterations, the average ammonia–nitrogen level in the facility's effluent dropped

from 4.8 mg/L to only 0.4 mg/L—a 92 percent reduction. The cooperative effort between the village and the New York State Department of Environmental Conservation significantly improved nitrification and put the facility back into compliance with its discharge permit.

Wet Weather Events Cause Problems for Treatment

Ticonderoga WWTP, New York

Often, difficult weather conditions create problems at treatment plants. For example, the Ticonderoga Wastewater Treatment Plant, which is located in the Adirondack Mountains at the northern tip of Lake George, struggled each year with its widely varying inflow from springtime snow melts and heavy rains. Inflow ranged from 0.5 mgd in dry weather to 4 mgd during wet conditions.



Ticonderoga's facility has three 0.5 million gallon tanks to hold storm flow until treatment can be provided. However, when those holding tanks are full, any flow that cannot be treated through the facility is diverted directly to a receiving stream. Technical assistance providers were called in to help optimize operations under high hydraulic loads.



Settling columns proved valuable in optimizing plant performance at Ticonderoga WWTP.

The 104(g)(1) assistance at Ticonderoga WWTP focused on minimizing bypass events and on maximizing treatment during rain events. The two keys to successful operation during high hydraulic loads are to optimize sludge quality and plant operation and to give the operator a tool to control the process. Sludge quality was improved through chlorination, sludge wasting, and mode change to sludge reaeration. The need to have a process strategy “tool” to operate this unique facility was recognized as an important step in the successful treatment of the maximum amount of wastewater. The 104(g)(1) trainer showed Ticonderoga’s operator how to use settling velocity and state point analysis to determine acceptable loading rates to the secondary clarifiers. Using settling columns and spreadsheets with graphs, the operator can now “predict” how much flow the plant can successfully treat at any given time. This approach has proved invaluable in treating storm flows well above the plant design and in emptying the storm tanks as quickly as possible to prepare for future storm events.

Since receiving 104(g)(1) assistance, the Ticonderoga facility has successfully treated over 4 mgd of wastewater during a simulated

storm event—well above its design flow of 1 mgd. The 104(g)(1) assistance is credited with helping the operator greatly reduce the amount of pollutants discharged from Ticonderoga WWTP into the receiving stream.

Nitrification Problems Stress Treatment System

Atlantic County WWTP, New Jersey

In 1996, the Atlantic County Utilities Authority (ACUA) found elevated biochemical oxygen demand at its wastewater treatment plant. The plant’s influent was at normal levels, and there were no unusual dissolved oxygen demands. However, even with crystal clear effluent and low total suspended solids levels, the biochemical oxygen demand was just over 30 mg/L, when the average usually ran about 12 mg/L.

Chris Hoffman, 104(g)(1) technical assistance provider with New Jersey’s Department of Environmental Protection, was informed of the facility’s problems. Because he suspected that the plant was nitrifying, Hoffman suggested that the plant effluent be analyzed for both total and carbonaceous biochemical oxygen demand.

When the analysis confirmed nitrification, Hoffman suggested wasting activated sludge to lower the mean cell residence time, and he also advised that the Authority request a National Pollutant Discharge Elimination System permit modification of effluent limitation from biochemical oxygen demand to carbonaceous biochemical oxygen demand. As a result of Hoffman’s experience and assistance, the facility was able to achieve effluent values within its permit conditions.

Region 2

Community officials were pleased with the 104(g)(1) assistance. In a letter of appreciation to Hoffman for the 104(g)(1) work, William Hiller, Director of Operations for the ACUA, wrote, "From the opinions and suggestions you conveyed to me, it was obvious you have an extensive background and personal interest in the wastewater treatment field. In addition, your opinions played an important role in daily process control decisions, and ultimately ACUA achieved effluent values within our permit conditions."

Region 2 Contacts

Environmental Protection Agency

John Mello
EPA Region 2 Coordinator
Division of Environmental Planning and Protection
290 Broadway
New York, NY 10007-1866
(212) 637-3836
mello.john@epa.gov
<http://www.epa.gov/region2>

New Jersey

New Jersey Department of Environmental Protection
Christian T. Hoffman
P.O. Box 029
401 East State Street
Second Floor
Trenton, NJ 08625-0029
(609) 984-6840
Fax: (609) 777-0432
choffma2@dep.state.nj.us
<http://www.state.nj.us/dep>

New York

New York State Department of Environmental Conservation
Phillip T. Smith
Room 340
50 Wolf Road
Albany, NY 12233-3506
(518) 457-4225
Fax: (518) 485-7786
ptsmith@gw.dec.state.ny.us
<http://www.dec.state.ny.us>

Puerto Rico

Not currently participating in the 104(g)(1) program

U.S. Virgin Islands

Not currently participating in the 104(g)(1) program